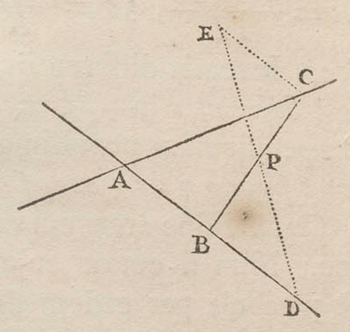
De Mundi Systemate

Si longitudinum obſervatarum parvæ ſint differentiæ, puta graduum tantum 4 vel 5; ſuffecerint obſervationes tres vel quatuor ad inveniendam longitudinem & latitudinem novam. Sin majores ſint differentiæ, puta graduum 10 vel 20, debebunt obſervationes quinque adhiberi.

LEMMA VII.

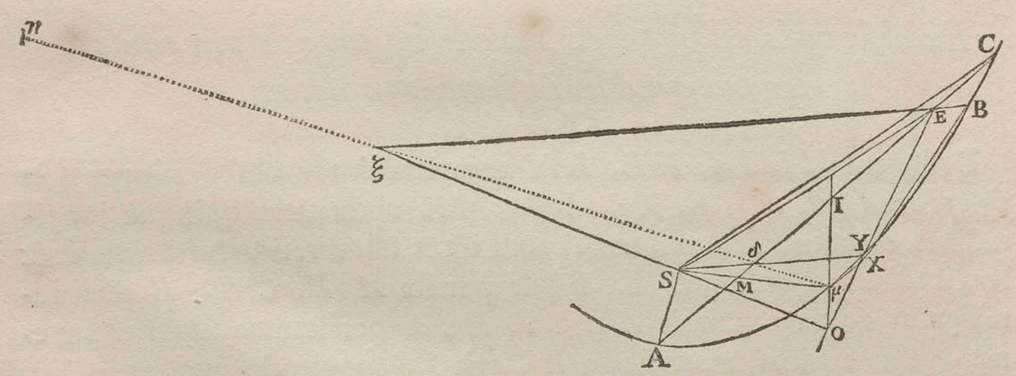
Per datum punctum P *ducere rectam lineam* BC, *cujus partes* PB, PC, *rectis duabus poſitione datis* AB, AC *abſciſſæ, datam habeant rationem ad invicem.*



A puncto illo *P* ad rectarum alterutram *AB* ducatur recta quævis *PD*, & producatur eadem verſus rectam alteram *AC* uſque ad *E*, ut ſit *PE* ad *PD* in data illa ratione. Ipſi *AD* parallela ſit *EC*; & ſi agatur *CPB*, erit *PC* ad *PB* ut *PE* ad *PD*. *Q.E.F.*

LEMMA VIII.

Sit ABC *parabola umbilicum habens* S. *Chorda* AC *biſecta in* I *abſcindatur ſegmentum* ABCI, *cujus diameter ſit* Iμ



Liber Tertius.

Iμ & vertex μ. In Iμ producta capiatur μO æqualis dimidio ipſius Iμ. Jungatur OS, & producatur ea ad ξ, ut ſit Sξ æqualis 2SO. Et ſi cometa B moveatur in arcu CBA, & agatur ξB ſecans AC in E: dico quod punctum E abſcindet de chorda AC ſegmentum AE tempori proportionale quamproxime.

Jungatur enim *EO* ſecans arcum parabolicum *ABC* in *Y*, & agatur *μX*, quæ tangat eundem arcum in vertice *μ*, & actæ *EO* occurrat in *X*; & erit area curvilinea *AEXμA* ad aream curvilineam *ACYμA* ut *AE* ad *AC*. Ideoque cum triangulum *ASE* ſit ad triangulum *ASC* in eadem ratione, erit area tota *ASEXμA* ad aream totam *ASCYμA* ut *AE* ad *AC*. Cum autem *ξO* ſit ad *SO* ut 3 ad 1, & *EO* ad *XO* in eadem ratione, erit *SX* ipſi *EB* parallela: & propterea ſi jungatur *BX*, erit triangulum *SEB* triangulo *XEB* æquale. Unde ſi ad aream *ASEXμA* addatur triangulum *EXB*, & de ſumma auferatur triangulum *SEB*, manebit area *ASBXμA* areæ *ASEXμA* æqualis, atque ideo ad aream *ASCYμA* ut *AE* ad *AC*. Sed areæ *ASBXμA* æqualis eſt area *ASBYμA* quamproxime, & hæc area *ASBYμA* eſt ad aream *ASCYμA*, ut tempus deſcripti arcus *AB* ad tempus deſcripti arcus totius *AC*. Ideoque *AE* eſt ad *AC* in ratione temporum quamproxime. *Q.E.D.*

Corol. Ubi punctum *B* incidit in parabolæ verticem *μ*, eſt *AE* ad *AC* in ratione temporum accurate.

Scholium.

Si jungatur *μξ* ſecans *AC* in *δ*, & in ea capiatur *ξn*, quæ ſit ad *μB* ut 27 *MI* ad 16 *Mμ*: acta *Bn* ſecabit chordam *AC* in ratione temporum magis accurate quam prius. Jaceat autem punctum *n* ultra punctum *ξ*, ſi punctum *B* magis diſtat a vertice principali parabolæ quam punctum *μ*; & citra, ſi minus diſtat ab eodem vertice.